

JEFFERSON COLLEGE

COURSE SYLLABUS

WLD243

GAS METAL ARC WELDING (MIG)

5 Credit Hours

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Revised by
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WLD243 Gas Metal Arc Welding (MIG)

I. CATALOGUE DESCRIPTION

Prerequisite: WLD142
5 semester hours credit

Gas Metal Arc Welding (MIG) deals with the practice gas metal arc welding in all positions and inspection and testing procedures. Blueprint reading is also included. (F,S)

II. GENERAL COURSE OBJECTIVES

Upon completion of the course, the student should be able to:

- A. Improve and develop personal craftsman-like skills
- B. Develop all skills inherent to basic processes
- C. Take their place in life and fulfill their needs as an enlightened member of their chosen career
- D. Develop personal, positive attitudes, i.e., leadership skills, individual initiative and responsibility, a willingness to do more than the minimum, a willingness to accept assignments, reliability and dependability to deliver pride in work well-done.

III. OUTLINE OF TOPICS

- A. MIG Welding
 - 1. Gas Metal Arc Welding Equipment, Setup, and Operation
 - a. Metal transfer
 - b. Melting and deposit rate
 - c. Power supply
 - d. Weld pool control
 - e. Equipment
 - f. Spot welding
 - g. Practices of joint - flat, horizontal, vertical, overhead
 - h. Test plates
 - 2. MIG Welding - Part I
 - a. Setup
 - b. Practices
 - c. Flat position 1G and 1F

3. MIG Welding - Part II
 - a. Vertical up 3G and 3F
 - b. Vertical down 3G and 3F
 - c. Horizontal 2G and 2F
 - d. Overhead 4G and 4F
 - e. Pulsed 1G
 - f. Axial spray
4. MIG Welding - Part III
 - a. Principles of operation - flux core welding
 - b. Equipment
 - c. Electrodes
 - d. Flux
5. MIG Welding - Part IV
 - a. Sub arc
 - b. Weld travel
 - c. Electrode feed
 - d. Contact tip
6. MIG Welding - Part V
 - a. Electrodes
 - b. Flux
 - c. Advantages of SAW - Submerged Arc Welding
 - d. Disadvantages of SAW - Submerged Arc Welding
7. MIG Welding - Part VI
 - a. Arc starting
 - b. Welding backing

B. Plasma Cutting and Usage

1. Plasma
2. Arc plasma
3. Plasma torch
4. Power and gas cables
5. Power requirements
6. Heat input
7. Distortion
8. Applications

C. Welding Codes, Standards, and Certification

1. Codes
2. Standards
3. Procedures
4. Specifications
5. Professional quality
 - a. Welder qualification
 - b. Welder certification
 - c. General information

- D. Welding Joint Design
 - 1. Welding Costs, and Welding Symbols - Part I
 - a. Welding joint design
 - b. Welding costs
 - c. Welding metal costs
 - d. Welding symbols
 - 2. Welding Costs, and Welding Symbols - Part II
 - a. Types of welds
 - b. Location of welds
 - c. Fillet welds
 - d. Plug welds

IV. UNIT OBJECTIVES

The student should be able to:

- 1. Identify the standard grooves used to ensure satisfactory joint preparation.
- 2. Explain welder and weld quality needed for high strength-welds.

V. METHOD(S) OF INSTRUCTION

10% Lecture
90% Lab Performance

VI. REQUIRED TEXTBOOK(S)

Welding - Principles and Applications, Larry Jeffus

VII. REQUIRED MATERIAL(S)

Safety Glasses
#1 Victor Welding Tip 1-W-1
Tip Cleaners
Chipping Hammer
Wire Brush
Cutting Goggles with #5 Lens
Welding Hood with #10 Lens
Soap Stone
Combination Square
Vise Grip
Flint Type Striker
Welding Gloves
Welding Jacket
Padlock for Locker
Boots or Shoe Protector

VIII. SUPPLEMENTAL REFERENCES

None

IX. METHOD OF EVALUATION

A. Distribution of the Final Grade

30% - Welding Manipulative Skills - Practical Welding Tests
30% - Examination of Welding Theory - Semester Tests and Chapter Reviews
20% - Instructor Evaluation - Attitude and attendance, emphasis being placed on positive work attitudes, initiative and cooperation.
20% - Final Examination

B. Attendance Policy

Attendance for this class is mandatory. According to the Attendance Policy listed in the Jefferson College Catalog, AIf a student misses more than 15 percent of the total time (including lecture and laboratory) that the class meets in a term, the student may be removed from the class.@

For this class, four (4) tardies constitute one absence.

C. Assignment of Final Letter Grade

A - 90 to 100
B - 80 to 89
C - 70 to 79
D - 60 to 69
F - Below 59

IX. ADA AA STATEMENT

Any student requiring special accommodations should inform the instructor and the Coordinator of Disability Support Services (Technology Center 101; phone 636-481-3169).

X. ACADEMIC HONESTY STATEMENT

All students are responsible for complying with campus policies as stated in the Student Handbook (see College website <http://www.jeffco.edu>).

XI. ATTENDANCE STATEMENT

Regular and punctual attendance is expected of all students. Any one of these four options may result in the student being removed from the class and an administrative withdrawal being processed: (1) Student fails to begin class; (2) Student ceases participation for at least two consecutive weeks; (3) Student misses 15 percent or more of the coursework; and/or (4) Student misses 15 percent or more of the course as defined by the instructor. Students earn their financial aid by regularly attending and actively participating in their coursework. If a student does not actively participate, he/she may have to return financial aid funds. Consult the College Catalog or a Student Financial Services representative for more details.

XII. OUTSIDE OF CLASS ACADEMICALLY RELATED ACTIVITIES

The U.S. Department of Education mandates that students be made aware of expectations regarding coursework to be completed outside the classroom. Students are expected to spend substantial time outside of class meetings engaging in academically related activities such as reading, studying, and completing assignments. Specifically, time spent on academically related activities outside of class combined with time spent in class meetings is expected to be a minimum of 37.5 hours over the duration of the term for each credit hour.